

Comments and responses received on the draft interim CAP submitted September 2013

Summary of Comment	Comment submitted by – dated -	DEQ response
<p>Please expand monitoring network to better delineate the plume of MTBE.</p>	<p>Amy Stephan:10/17/13, Great Falls Citizen’s Association (GFCA):10/22/13; Kent Campbell:10/22/13; Glen Sjoblom:10/22/13, Matt Tonkin: 10/14/13</p>	<p>A typical groundwater investigation for a petroleum release at a petroleum retail facility includes three to five groundwater monitoring wells. For this case, eighteen groundwater monitoring wells have been constructed. Seven preexisting monitoring wells at the former Shell and the out-of-use drinking water well at the former Exxon have been added to the sampling network in the area of the release. In addition, the twenty-two drinking water wells nearest to the release are being sampled as a precaution. The Corrective Action Plan (CAP) approval will request the immediate construction, subject to access being provided by the offsite property owners, of three additional deep monitoring wells north, south and south east of the release and two shallow monitoring wells in the downgradient direction to the southeast, where the main contaminant plume has not been fully delineated. Two additional intermediate depth “transition well” monitoring wells will be constructed southeast and south of the release. Additional monitoring wells from previous investigations at other sites or cases may also be added to the monitoring network. DEQ will require the construction of more monitoring wells if data from the ongoing investigations shows they are necessary.</p>
<p>The Great Falls community places great value on groundwater quality and on the need to safeguard private wells that use groundwater as the primary water source for residential properties in the Great Falls area. Recommend a clean-up objective of 20-40 ug/l is adopted.</p>	<p>Amy Stephan: 10/17/13; GFCA: 10/22 2013; Kent Campbell: 10/22/13; Glen Sjoblom: 10/22/13, Matt Tonkin 10/14/13</p>	<p>DEQ agrees with the need to safeguard Great Falls drinking water wells and ensure groundwater affected by this release poses no risk of adversely affecting those drinking water wells. DEQ’s petroleum program requires that the responsible person (RP) remediate a petroleum spill to the extent necessary to reach a contaminant concentration where there is no significant risk to human health and the environment. Fairfax Petroleum Realty, LLC (Fairfax Petroleum) has stepped into the shoes of the RP (Exxon) and assumed liability for this cleanup.</p> <p>In this case, the identified “at risk” receptors in the CAP and Site Characterization Report (SCR) are the users of drinking water wells in the Great Falls area. Both onsite and offsite pollution will need to be at</p>

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		concentrations considered protective of those wells before this case can be closed. The protective concentrations will be determined by modeling and verified by groundwater sampling and monitoring.
Installation of a municipal water supply is unacceptable.	Amy Stephan: 10/17/13.	The CAP does not propose to install a municipal water supply.
How will the DEQ ensure that the surface water discharge will not adversely impact surface water, either by concentration of contaminants or by flow volume?	Amy Stephan: 10/17/13; GFCA: 10/22/13; Glen Sjoblom: 10/22/13.	The DEQ will register the discharge under a Virginia Permit Discharge Elimination System (VPDES) General Permit. VPDES permits require the discharged effluent to be of quality that will not inhibit the water quality standards of the receiving stream; that is, the protection of the indigenous aquatic life and other beneficial uses of the stream. The permit also requires the effluent to be monitored for compliance with discharge limits. DEQ has issued several thousand VPDES discharge permits, many with rates greater than the proposed, and based on this experience we have no reason to believe the proposed discharge will cause any measureable erosion. Streams and unnamed tributaries typically experience erosion during significant rainfall events when the rate and energy of the runoff far exceeds the proposed discharge rate of 10-25 gpm. Further, proposed rates are based on the capacity of the treatment system and actual rates tend to be much smaller. As an added perspective, a flow rate of 10 gpm is a typical flow from a garden hose.
The MTBE distribution in deep bedrock and connections between different “zones” of the aquifer should be better characterized	Kent Campbell: 10/22/13; GFCA:10/22/13; Glen Sjoblom: 10/22/13; Matt Tonkin: 10/14/13.	Three bedrock groundwater monitoring wells have been constructed onsite and two have been constructed offsite. Of these, bedrock well 17D will be modified to allow depth-specific groundwater monitoring to verify how groundwater quality varies with depth. DEQ will request additional bedrock monitoring wells north, southeast, and south of the release, subject to access being provided by the property owners. If, after these wells have been constructed, tested, and sampled, additional bedrock monitoring wells are found necessary to adequately characterize the effect of the release on bedrock groundwater, then DEQ will require that Fairfax Petroleum construct them.

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How will solid wastes be managed?	Amy Stephan: 10/17/13.	Solid wastes will be managed in accordance with the relevant Virginia Solid Waste Regulations.
Regular monitoring reports should be prepared and shared with the local community	Amy Stephan: 10/17/13	Fairfax Petroleum must complete quarterly groundwater monitoring and submit a report to DEQ. DEQ requires these reports to contain a description of the current progress of the corrective action. As the reports are received and verified for completeness by the DEQ case manager, they will be uploaded to DEQ’s website and DEQ will also forward the reports to the GFCA.
How will DEQ, Fairfax County, VDOT, the responsible person, future developers and the local community coordinate activities?	Amy Stephan:10/17/13; GFCA:10/22/13	The Fairfax Petroleum is responsible for ensuring all required permits and permissions are obtained and that future construction meets the conditions in the CAP.
The CAP does not address chlorinated solvents	Kent Campbell:10/22/13	This CAP is being prepared under the regulatory authority of DEQ’s petroleum program regarding a release of petroleum. DEQ’s petroleum program has no authority to require the remediation of substances other than petroleum constituents; therefore, the CAP will not address chlorinated solvents. Further, DEQ does not have any information to attribute the chlorinated hydrocarbons present in the area to the actions of Fairfax Petroleum (or Exxon), the responsible person for this cleanup. The US Environmental Protection Agency began addressing chlorinated solvents in Great Falls in 1994 under the authority of the Federal Underground Injection Control Program Regulations.
The risk associated with migration of vapors to indoor air should be assessed further: in particular, the risk	Kent Campbell: 10/22/13; Glen Sjoblom 10/22/13	The revised CAP prepared by Kleinfelder (Fairfax Petroleum’s cleanup consultant) assessed the offsite vapor risk. A vapor barrier for future onsite buildings is an appropriate and necessary engineering control to safeguard against potential risks from petroleum vapor intrusion and installation of a vapor barrier for future buildings is part of this CAP. Additional soil vapor

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associated with sumps and elevators at the garage for the Great Falls Crossroads building and buildings on the Great Falls Shopping Center.		monitoring will be required if groundwater monitoring indicates offsite structures are at risk. In addition, the soil vapor extraction system to be installed and activated in the next few months will reduce the mass of petroleum contaminants remaining in soil that could migrate to future onsite buildings. The corrective action will not be complete until either an appropriate vapor barrier has been installed in a new construction and appropriately documented or it can otherwise be demonstrated that there is no significant risk of vapor intrusion to onsite construction.
The monitoring network should be expanded to include the former Exxon septic system	Kent Campbell: 10/22/13	Monitoring wells 6S, 6D, 7 and 10 appear to provide adequate information on whether potential “secondary” petroleum releases might have occurred from the former Exxon septic system. There is no evidence that they have.
Is Great Falls Grange Park served by public water?	Kent Campbell: 10/22/13	Information obtained by Kleinfelder from Fairfax County and Fairfax Water indicates that Great Falls Grange Park is provided with public water.
Recommend wells are sampled using “low-flow” sampling methodologies.	Kent Campbell: 10/22/13	Fairfax Petroleum has agreed to implement low flow sampling for routine groundwater monitoring.
The draft CAP indicated there are “multiple applications for heath, well and septic projects within 1,500 feet of the site.” The CAP should clarify where these wells are.	Kent Campbell: 10/22/13	The revised CAP clarifies that the Fairfax County Health Department applications referenced are exclusively for proposed septic systems, not for new well installations.
A specific vapor recovery endpoint should be adopted for the proposed soil vapor extraction (SVE)	Kent Campbell: 10/22/13; Glen Sjoblom: 10/22/13	DEQ will require Fairfax Petroleum to assess recovery rates and expects that the SVE system will continue to operate so long as the system is effectively recovering petroleum vapor. If DEQ considers further recovery is practicable and can be enhanced by modifying the system, DEQ will

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system; an asymptotic recovery rate should not be adopted as a remedial endpoint.		require that.
Recommend additional post operational monitoring and “rebound” studies.	Kent Campbell: 10/22/13; Glen Sjoblom: 10/22/13; Matt Tonkin: 10/14/13.	DEQ will require that monitoring continues until sufficient information is available to confirm that the remaining onsite and offsite petroleum concentrations are at levels considered to be protective of the area drinking water wells. DEQ typically considers eight quarterly monitoring events to provide a statistically significant number of data points that can be used to demonstrate a required trend or outcome. Section 11.0 of the CAP states Fairfax Petroleum’s intention to complete appropriate rebound studies.
Kleinfelder should present testing methodologies and decision making tools for assessing and documenting natural attenuation	Kent Campbell: 10/22/13.	Section 9.6 of the revised CAP describes the analyses proposed to assess natural attenuation. Fairfax Petroleum will follow established methodologies, such as those outlined by EPA, to assess whether biodegradation of MTBE is occurring at this site.
The CAP should include a diagram showing the extent of the contaminant plume.	GFCA: 10/22/13; Glen Sjoblom: 10/22/13	Figure 10 of the revised CAP shows the MTBE distribution estimated for 2009 and for 2013. Updated figures showing the MTBE distribution will be presented in all future monitoring and corrective action implementation reports.
The CAP should require offsite remediation as well as on-site remediation and should address deep bedrock groundwater contamination.	GFCA: 10/22/13; Glen Sjoblom 10/22/13; Matt Tonkin: 10/14/13	DEQ’s Petroleum Program requires that the RP remediate a petroleum spill to the extent necessary to confirm that the remaining onsite and offsite concentrations are at levels considered to be protective of human health (either through exposure from drinking water wells or the migration of petroleum vapors into buildings) or the environment (for example, potential contamination of Mine Run or Hickory Run). If offsite or deep bedrock MTBE concentrations exist in groundwater that pose a significant risk to human health and the environment, DEQ will require that Fairfax Petroleum modify the CAP to ensure that the risk is addressed.

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The CAP, particularly the SVE system, should be implemented as soon as possible	GFCA: 10/22/13	DEQ agrees. Fairfax Petroleum initiated the process to install an SVE system in 2013 and, based on conversations between Kleinfelder and DEQ in December and January, the system will be operational by March 2014, subject to obtaining appropriate permits and a connection to the permanent local power supply.
Consider using microbial inoculation as a remedial action.	Glen Sjoblom: 10/22/13	DEQ has approved bioremediation corrective action plans for petroleum releases in the past and experience shows bioremediation is most effective when petroleum mass has mostly been removed by “conventional” remediation action such as SVE and ‘pump and treat’. Bioremediation could be one option DEQ will ask Fairfax Petroleum to consider if the physical remediation technologies do not achieve the adopted remedial end point.
Provide references to other studies for this release and for other releases referred to.	Glen Sjoblom: 10/22/13	The revised CAP contains a list of references. Additional information, including information on nearby petroleum cleanups, can be obtained from DEQ on request. Technical reports and letters for this release are available on DEQ’s website: <a href="http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/PetroleumProgram/CleanupActivities/GreatFalls.aspx">http://www.deq.virginia.gov/Programs/LandProtectionRevitalization/PetroleumProgram/CleanupActivities/GreatFalls.aspx</a> for direct download by the public.
A site conceptual model should be discussed in the CAP.	Glen Sjoblom: 10/22/13	A site conceptual model is presented in section 6.0 of the revised CAP.
The CAP needs to provide an estimate of the amount of petroleum released.	Glen Sjoblom: 10/22/13	While the release was reported in 2009, the actual time frame of the release is not known. As primarily MTBE has been detected, this was most likely intermittent and caused by occasional vapor releases from the tank manhole covers or vapor recovery system that occurred before 2006, when petroleum providers voluntarily removed MTBE from their petroleum products. Although it is difficult to estimate the quantity of the release, Kleinfelder estimates, on page 38 of the revised CAP, that approximately 16 kg of MTBE (approximately five gallons) remain in groundwater in the

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		source area. No estimate was made of the MTBE mass in the unsaturated zone.
Reference should be made to surface streams in the release area.	Glen Sjoblom: 10/22/13	Kleinfelder describes surface water and its relationship to groundwater in sections 2.3.1 and 6.4 of the CAP.
Groundwater should be analyzed using EPA method 524.2 not EPA 8260 or 8012.	Glen Sjoblom: 10/22/13	Method 524.2 is used to analyze public water supplies under the Safe Drinking Water Act. Environmental investigations, such as this one, typically adopt methods 8260, 8012 and 8015 to analyze volatile organic compounds (VOC) to allow for a wider range of target compounds to be detected and reported. DEQ will continue to require the use of methods 8260, 8012 and 8015 during this investigation.
The remediation design is not complete and the CAP should not be approved until it is.	Glen Sjoblom: 10/22/13	The initial CAP implementation requires the appropriate and necessary implementation of a soil vapor extraction system to remove remaining MTBE in the unsaturated zone. This part of the CAP can be approved and implemented now. The CAP recommends, and the CAP approval will require, further testing, characterization, monitoring and design to establish additional remedial measures to address the extent of groundwater remediation. These further corrective actions will be described by Fairfax Petroleum in a CAP addendum and will be subject to further public comment and DEQ approval.
Groundwater pump and treat may affect the drinking water wells on the Oliver estates.	Glen Sjoblom: 10/22/13	While topography, groundwater flow directions and available geological information indicate that it is unlikely that the Oliver estate wells use groundwater that would originate or pass through this facility, Fairfax Petroleum will monitor the effect of the pump tests and remediation on monitoring wells to the south of the release and assess whether there will be any effect on groundwater flowing to these wells.
Kleinfelder should outline how they will ensure the operational integrity of the remediation systems.	Glen Sjoblom: 10/22/13	The CAP outlines the system, system operation, permitting and maintenance and monitoring in section 9. Fairfax Petroleum is responsible for ensuring that the mechanical systems meet local county planning and construction requirements and have all appropriate permits. DEQ expects that system permitting information will be included in future corrective

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The air permit or air permit exemption should be provided to the local community.	Glen Sjoblom: 10/22/13	action monitoring reports. Kleinfelder will present air permits or permit exemption letters (and any other permits relevant to the remedial action) in their corrective action monitoring reports.
Revisions and comments made should be adopted in the revised CAP	Glen Sjoblom: 10/22/13	Many comments and suggested revisions were included in the revised CAP published in November 2013. Letters from DEQ to GFCA and Fairfax Petroleum discussing these comments were sent on November 1, 2013, and on November 15, 2013.

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<p>Fairfax Petroleum Realty, Kleinfelder, and GFCA agreed to document in the Corrective Action Plan, the commitment by Fairfax Petroleum Realty to clean up the entire contamination plume on both sides of Walker Road. That agreement was recorded in Fairfax Petroleum Realty letter dated December 5, 2013, and confirmed by GFCA letter dated December 5, 2013. Leiter &amp; Cramer submitted the following language in a letter dated December 24, 2013: <i>“Following completion of the pre-design aquifer test, the design for the groundwater extraction remedy will be finalized and presented to the VADEQ. Understanding that additional characterization activities are proposed in Section 15.0, the groundwater extraction remedy will be designed to have the capability and capacity to address MTBE at depth and offsite and will be used to remediate the entire contamination plume to a VADEQ-approved endpoint. Once sufficient information has been collected following these off-site characterization activities proposed in Section 15., including monitoring the progress of SVE and groundwater extraction remedy, necessary enhancements or additions will be made to remediate MTBE to a VADEQ-approved endpoint.”</i></p>	<p>Great Falls Citizen’s Association December 18, 2013 (GFCA), and Leiter &amp; Cramer PLLC December 24, 2013.</p>	<p>DEQ’s petroleum program requires the Responsible Person (RP) to remediate a petroleum spill to the extent necessary to reach a contaminant concentration where there is no significant risk to human health and the environment. Fairfax Petroleum Realty, LLC (Fairfax Petroleum) stepped into the shoes of the RP (Exxon) as the responsible person.</p> <p>In this case, the identified at-risk receptors in the Corrective Action Plan (CAP) and Site Characterization Report (SCR) are the users of drinking water wells in the Great Falls area. Both onsite and offsite pollution will need to be at concentrations that are protective of those wells before this case can be closed. Note: there will likely be remaining contamination at case closure; however, the onsite and offsite contaminant concentrations would be at levels which are protective of local drinking water supplies.</p> <p>Fairfax Petroleum, Kleinfelder, and GFCA’s agreement is not enforceable by DEQ and is not required to be in the CAP.</p>
<p>To provide a means of ensuring the results of this determination will be accepted by the public, we believe it is essential that there be an independent peer review of the analysis, including the models used, all data, parameters and assumptions. We request that DEQ provide funding for this peer review from the</p>	<p>GFCA December 18, 2013</p>	<p>Reimbursements from the Virginia Petroleum Storage Tank Fund (VPSTF) can only be made to the responsible person for activities deemed by DEQ to be reasonable and necessary to investigate and remediate a petroleum release. DEQ maintains sufficient technical expertise on</p>

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<p>Virginia Tank Cleanup Fund, and enter into an agreement, whereby the Great Falls Citizens Association can select one or two independent scientists and manage the review, and report the results to DEQ.</p>		<p>staff to review CAPs to ensure that appropriate remedial action is taken to remediate a release. Hiring a third party reviewer is not necessary to effect corrective action at this site; therefore, DEQ will not require an independent peer review as part of this CAP nor will it authorize use of the Fund to pay for an independent peer review.</p>
<p>The Corrective Action Plan should include a line of monitoring wells outside the current spill area yet in the direction(s) the plume is known or thought to be heading, which would be monitored periodically until remediation is assured. This would act as an early warning should the contamination reach that line, or if it does not reach that line, provide reassurance to residents that the plume is contained inside and there is no risk to private wells outside the line. For example, for the plume moving southeast, a combination of existing wells such as MW-3, MW-22, MW-2, MW-4, MW-11, MW-12, MW-13, MW-10 (or vicinity) could be established for that purpose. Also, since MW-3 appears to be directly in line with the apparent plume direction, if MW-3 cannot be located, another well should be placed in that location.</p>	<p>GFCFA December 18, 2013</p>	<p>Additional monitoring wells are proposed in the CAP to further delineate the dissolved phase petroleum plume. Other preexisting wells are planned to be included in the monitoring network. DEQ will require key wells to be monitored each quarter until the conclusion of this case. The full network of monitoring wells, including offsite wells installed previously for other projects, will be sampled annually. If ongoing investigations and monitoring indicate additional monitoring points are required in the network, DEQ will require Fairfax Petroleum to construct those wells.</p>
<p>We have concerns about the mass of contaminant that has been delivered to the competent bedrock beneath the saprolite, over the time period that the tanks were leaking. Much of the original contaminant mass has not been accounted for, and may only become evident in future years. We are not convinced that the aerial view of contamination in the saprolite, as shown in the</p>	<p>GFCFA December 18, 2013</p>	<p>The CAP suggests, and DEQ agrees, that the majority of petroleum contaminants from this release are present in the weathered bedrock (saprolite and transition zone) and that the majority of contaminant movement occurs in the transition zone. Available data shows that storage and rates of groundwater movement in the bedrock in the site</p>

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<p>plume map in the CAP, is representative of contaminant transport processes in the bedrock. We request that another set of maps be provided and included in the CAP, showing the modeled contamination plume in the deeper zones, and updated when additional data is available. Also, we are not convinced that the CAP proposed shallow and deep bedrock monitoring wells will be able to delineate the extent of deep contamination. While the proposed well to the north is a deep bedrock well, the proposed well to the south is proposed to only be 60 feet deep, and cannot show whether contamination is in deeper strata. This is inconsistent. The well to the south should also be a deep well. It is not sufficient to merely state that the bedrock has lower permeability and porosity; the aquifer testing data should determine the bedrock parameters, and they should be used to develop a method of remediation from the deeper zones. DEQ should specifically require bedrock remediation be included in the remediation system.</p>		<p>area is limited and that MTBE concentrations in the bedrock are significantly lower than in the upper zones of the aquifer. The focus of the CAP is therefore on the main area of MTBE contamination and movement: the saprolite and transition zone, and the proposed additional monitoring wells target those areas, as well as the deep bedrock. The CAP proposes the construction of dedicated bedrock sampling systems in existing deep bedrock wells to determine more accurately the extent groundwater in the bedrock has been affected by this release. Subject to access being provided, additional bedrock monitoring wells are expected to be constructed to the north and south of the release and in the downgradient direction to the southeast that will test the hypothesis that most contaminant movement and mass is restricted to the saprolite and transition zone. DEQ will require bedrock groundwater remediation if MTBE concentrations in bedrock groundwater are considered to pose a significant risk to the area drinking water wells.</p>
<p>During the installation of these additional deep and shallow wells, it is important that accurate hydraulic monitoring of all the wells be conducted at one time to identify any potential hydraulic differentials and potential hydraulic communication between the initial site of contamination and the new monitoring locations. The structure of the groundwater flow and the distribution of contaminants may be too complex to</p>	<p>GFCFA December 18, 2013</p>	<p>Groundwater quality and elevation will be monitored in the shallow groundwater, the transition zone, and the bedrock. Monitoring will continue until sufficient information is available to confirm that the area drinking water wells are not significantly at risk. DEQ typically considers eight quarterly monitoring events to provide a statistically significant number of data points that can be used</p>

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<p>delineate with a sparse array of bedrock locations. It is important that hydraulic and chemical monitoring be conducted throughout the remediation activity, and after remediation in deep wells, and continued monitoring at potential points of human exposure. The stated minimum one-year post remediation monitoring will not ensure nearby private wells are protected, and this period should be longer.</p>		<p>to demonstrate a required trend or outcome.</p>
<p>We commented earlier about the air and surface discharge quality and quantity, and the CAP currently contains reference to obtaining a VADEQ permit for air and liquid discharges, but quantities of pollutants to be released, were not included. DEQ is requested to require estimated quantities of pollutants to be included in the CAP.</p>	<p>GFCFA December 18, 2013</p>	<p>The applications to DEQ for air and liquid discharges will need to include an estimate of the proposed discharge quantities in order for the necessary permits or permit exemptions to be issued. The applications and permits are expected to be published in the relevant monitoring report.</p>
<p>The report of results of the initial monitoring well sampling in the new monitoring wells to the north and south and southeast should be promptly shared with the community of Great Falls. If contamination is found in directions other than southeast, the CAP will need to be amended to include a method of cleanup in those directions. DEQ should require in the CAP, a requirement for a quarterly review of the progress of the cleanup, and that this review be published and provided to DEQ, and a copy be provided to the Great Falls Citizens Association, and placed in the Great Falls Public Library.</p>	<p>GFCFA December 18, 2013</p>	<p>Fairfax Petroleum must complete groundwater monitoring each quarter and submit a quarterly report approximately one month after the end of the quarter. These monitoring reports are required to include a report on the progress of the corrective action. As soon as the reports are received and verified for completeness by the DEQ case manager they will be uploaded to DEQ's website. DEQ will also arrange for an electronic copy of the report to be forwarded to GFCFA.</p>
<p>It is reasonable to believe that the chemical spill has</p>	<p>Mr. Steve Dulaney</p>	<p>Further monitoring points for deep groundwater to</p>

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<p>spread to all 4 (four) quadrants around the Exxon site... North, South, East and West... with different degrees of impact. It is my understanding that particular emphasis is being placed on the southeastern flow and that the northern direction of contamination will soon be explored. Believe that the responsible action on the part of DEQ should be to offer all business centers near the former Exxon site (within several hundred feet) an opportunity to have a monitoring test well placed on their property. This would assist in measuring the full extent of how far the contamination has spread. As the North direction has been identified as an area of possible concern.. the 7/11 Shopping Center and Oliver's Corner Office Condominiums should be considered for a test well site.</p>	<p><a href="mailto:g.s.dulaney.bv7f@tatefarm.com">g.s.dulaney.bv7f@tatefarm.com</a> received December 24, 2013</p>	<p>the north and south of the release are considered necessary at this time to evaluate the potential for migration of petroleum contaminants along geologic structures following those directions. There is, however, no geological or hydrogeological reason to expect groundwater or contaminant movement to the west. The expected absence of groundwater movement to the west of the release has been confirmed by four monitoring wells in that direction that do not contain significant concentrations of petroleum hydrocarbons. The groundwater elevation in those wells also confirms the expected picture showing groundwater flow direction is to the southeast.</p> <p>A typical groundwater investigation for a petroleum release at a petroleum retail facility includes three to five groundwater monitoring wells. For this case, eighteen groundwater monitoring wells have been constructed and seven pre-existing monitoring wells at the former Shell and the out-of-use drinking water well at the former Exxon have been added to the sampling network in the area of the release. In addition, the twenty-two drinking water wells nearest to the release are being sampled as a precaution. The CAP approval will require the immediate construction, subject to access being provided by the offsite property owners, of three additional deep monitoring wells north, south and southeast of the release, one intermediate depth monitoring well to the south, and two shallow</p>

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		<p>monitoring wells in the downgradient direction to the southeast where the main contaminant plume has not been fully delineated. Additional monitoring wells from previous investigations may also be added to the monitoring network. Additional monitoring wells will be requested by DEQ if data from the ongoing investigations shows they are necessary.</p>
<p>The Introduction to the Corrective Action Plan (CAP) states "This CAP was prepared solely to satisfy the requirements of the VADEQ Petroleum Storage Tanks Program for petroleum constituents including methyl tertiary butyl ether (MTBE)." Why is the cleanup limited to this program and associated petroleum contaminants? The CAP states that chlorinated ethenes and other Volatile Organic Chemicals (VOCs) are present in the groundwater at this site. To ensure protectiveness of human health and the environment, the CAP should address these additional hazardous constituents and not be limited to MTBE from petroleum contamination. Potential routes of exposure for chlorinated ethenes include potable water from private drinking water wells and potential vapor intrusion to the future commercial building proposed for this site.</p>	<p>Amy Stephan: December 27, 2013</p>	<p>This CAP is being prepared under the regulatory authority of DEQ's petroleum program regarding a release of petroleum. DEQ's petroleum program has no authority to require the remediation of substances other than petroleum constituents; therefore, the CAP will not address chlorinated solvents. Further, DEQ does not have any information to attribute the chlorinated hydrocarbons present in the area to the actions of Fairfax Petroleum (or Exxon), the responsible person for this cleanup. The US Environmental Protection Agency began an investigation of chlorinated solvents in Great Falls in 1994 under the authority of the Federal Underground Injection Control Program Regulations.</p>
<p>Section 10.4 states "A vapor barrier is required for any future building constructed on-site and the exposure pathway for indoor air inhalation of vapors for on-site commercial workers is considered incomplete,</p>	<p>Amy Stephan December 27, 2013</p>	<p>A vapor barrier for future onsite buildings is an appropriate and necessary engineering control to safeguard against potential risks from petroleum vapor intrusion, and installation of a vapor barrier</p>

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<p>therefore, the establishment of an on-site risk based vapor phase hydrocarbon endpoint is not warranted.” In light of continuing national interest and the U.S. EPA’s developing guidance related to the vapor intrusion pathway, please expand on how this pathway can be dismissed based on a potential future control</p>		<p>for future buildings is part of this CAP. In addition, the soil vapor extraction system to be installed and activated in the next few months will reduce the mass of petroleum contaminants remaining in soil that could migrate to future on-site buildings. The corrective action will not be complete until either an appropriate vapor barrier has been installed in a new construction and appropriately documented or it can otherwise be demonstrated that there is no significant risk of vapor intrusion to on-site construction.</p>
<p>Please expand Section 11.0, Post Operational Monitoring Schedule, to include a contingency plan in case residual contamination remains in the groundwater at concentrations above the targeted endpoints. The CAP should discuss potential options if the proposed corrective actions are unsuccessful, including alternative technology options and/or longer-term monitoring. The citizens of Great Falls need assurance that implementation of the CAP will be protective of human health and the environment for the long term, which should include contingency plans that are in place in case remediation endpoints are not achieved.</p>	<p>Amy Stephan December 27, 2013</p>	<p>The CAP requested by DEQ is based on the information available at this time. If the proposed remedial technologies do not achieve the required remedial objectives, DEQ will require Fairfax Petroleum to submit alternative technology options in a CAP addendum at that time.</p>
<p>Please expand on the process that will be used to establish remediation endpoints for hazardous contaminants present at the site, and the public involvement process for commenting on future iterations of the CAP.</p>	<p>Amy Stephan December 27, 2013</p>	<p>The current CAP allows for the implementation of a soil vapor extraction system, the final design of a groundwater recovery system, the installation of additional shallow, deep, and transition zone monitoring wells and the use of appropriate modeling to predict the behavior of the contaminant</p>

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		plume on and offsite. Those models will be tested against monitoring data already obtained and monitoring data obtained as this case proceeds to ensure that the conditions on and offsite remain protective of neighborhood private drinking water supplies. The results of all of this work will be available once submitted to DEQ. DEQ anticipates that the remediation end points will be described in a CAP addendum due August 1, 2014. Public comment on the end points and other matters in the CAP addendum will be formally requested once the CAP addendum is submitted.
Section 11.0 states that a request for No Further Action (NFA) will be made when remediation endpoints have been achieved “at the end of the post operational monitoring.” Please clarify the period of time for which remediation endpoints need to be achieved and sustained prior to declaring NFA required.	Amy           Stephan December 27, 2013	While there is no set period of time for which remediation endpoints need to be achieved, DEQ typically considers eight quarterly monitoring events to provide a statistically significant number of data points that can be used to demonstrate a required trend or outcome.
Some HOAs and neighborhoods intended to submit comments but did not feel they had adequate understanding of the implications of the technical parts of the CAP to submit formal comments, nor had time to hire appropriate technical resources to represent their interests, since some just became aware of the issue in December 2013. As frustrating as this may sound to those of us working on the issue, it is also a (mal)function of the process: GFCA membership is paid and discretionary, and there was no notice of the issue nor comment cycle until a very small public announcement the day before Thanksgiving. So,	Amy           Stephan December 27, 2013	Public comment is welcome at any time. DEQ expects to publish all monitoring reports on the DEQ website within 30 days of receipt and the public is invited to review those documents and forward comments to the case manager. To ensure the remediation moves forward and project milestones are met, however, the formal corrective action plan public notice period is restricted to 30 days after the formal notice of the CAP is published. A CAP addendum is expected to be received from Fairfax Petroleum Realty by August 1, 2014, and public comment will again be

Comments and responses received on the final interim CAP published November 22, 2013

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<p>neighborhoods that were not directly contacted by the site owner or DEQ, no matter how close they are physically to the site, were left at an unfortunate disadvantage. They reserve the right to file comments at a future date.</p>		<p>formally requested at that time.</p>
<p>The remediation envisions a discharge to the Great Falls Village Center storm water system that discharges to Hickory Run (a tributary of Captain Hickory Run). Citizens are concerned this will degrade and erode the stream.</p>	<p>Bill Canis  <a href="mailto:Bcanis@yahoo.com">Bcanis@yahoo.com</a>                      December 17, 2013                      and Dave Marcille,                      December 20, 2013</p>	<p>The DEQ will register the discharge under a Virginia Permit Discharge Elimination System (VPDES) General Permit. VPDES permits require the discharged effluent to be of quality that will not inhibit the water quality standards of the receiving stream; that is, the protection of the indigenous aquatic life and other beneficial uses of the stream. The permit also requires the effluent to be monitored for compliance with discharge limits. DEQ has issued several thousand VPDES discharge permits, many with rates greater than the proposed, and based on this experience we have no reason to believe the proposed discharge will cause any measureable erosion. Streams and unnamed tributaries typically experience erosion during significant rainfall events when the rate and energy of the runoff far exceeds the proposed discharge rate of 10-25 gpm. Further, proposed rates are based on the capacity of the treatment system and actual rates tend to be much smaller. As an added perspective, a flow rate of 10 gpm is a typical flow from a garden hose.</p>